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DARRIN WESLEY HARRIS (40,636)  
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 Signature  
September 30, 2004  
 Date of Signature

**PATENT**  
**Case No. US000309**  
**(7790/210)**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
 BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re patent application of:	)	
	)	
BRUNING, GERT	)	
	)	Examiner: NGUYEN, H
Serial No.: 09/735,151	)	
	)	Group Art Unit: 2674
Filed: DECEMBER 12, 2000	)	
	)	
For: CONTROL AND DRIVE CIRCUIT	)	
ARRANGEMENT FOR	)	
ILLUMINATION PERFORMANCE)	)	
ENHANCEMENT WITH LED	)	
LIGHT SOURCES	)	

**APPEAL BRIEF**

**Mail Stop Appeal Brief - Patents**  
 Commissioner for Patents  
 P.O. Box 1450  
 Alexandria, VA 22313-1450

Dear Sir:

Appellant herewith respectfully presents a Brief on Appeal as follows:

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1. REAL PARTY IN INTEREST

The real party in interest is Koninklijke Philips Electronics N.V., a corporation of The Netherlands having an office and a place of business at Groenewoudseweg 1, Eindhoven, Netherlands 5621 BA. Koninklijke Philips Electronics N.V. is the ultimate parent of the assignee of record Philips Electronics North America Corporation, a Delaware corporation having an office and a place of business at 1251 Avenue of the Americas, New York, NY 10020-1104. Philips Electronics North America Corporation intends to further assign this application to Koninklijke Philips Electronics N.V.

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2. RELATED APPEALS AND INTERFERENCES

Appellant and the undersigned attorney are not aware of any other appeals or interferences which will directly affect or be directly affected by or having a bearing on the Board's decision in the pending appeal.

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3. STATUS OF CLAIMS

Claims 1-24 have been cancelled from the present application.

Claims 25-44 are currently pending in the present application, and are the claims on appeal. See, Claims Appendix.

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4. STATUS OF AMENDMENTS

Appellant did not file an after final request for reconsideration under 37 C.F.R.

§1.116 in response to a Final Office Action dated March 30, 2004.

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5. SUMMARY OF THE INVENTION

As illustrated in FIG. 4, a LED backlight for an LCD display comprises a primary circuit, a red secondary circuit 210R, a green secondary circuit 210G, and a blue secondary circuit 210B.

The primary circuit generates a primary voltage between a point X and a point Y. See, U.S. Patent Application Serial No. 09/735,151 at page 13, line 1 to page 14, line 12.

As illustrated in FIGS. 4 and 4b, red secondary circuit 210R is coupled to the primary circuit for receiving a secondary voltage  $V_{RO}$  as a function of the primary voltage. Red secondary circuit 210R includes a sub-array 230R of red LEDs, a sub-array switch Q5 operable in an ON state for allowing a flow of a LED current through sub-array 230R of red LEDs (the LED current being a function of secondary voltage  $V_{RO}$ ) and a sub-array controller 232G for controlling an operation of sub-array switch Q5 switch in the ON state. See, U.S. Patent Application Serial No. 09/735,151 at page 16, line 20 to page 18, line 14.

As illustrated in FIGS. 4 and 4c, green secondary circuit 210G is coupled to the primary circuit for receiving a secondary voltage  $V_{GO}$  as a function of the primary voltage. Green secondary circuit 210G includes a sub-array 230G of green LEDs, a sub-array switch Q3 operable in an ON state for allowing a flow of a LED current through sub-array 230G of green LEDs (the LED current being a function of secondary voltage  $V_{GO}$ ) and a sub-array controller 232G for controlling an operation of sub-array switch Q3

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switch in the ON state. See, *U.S. Patent Application Serial No. 09/735,151* at page 18, line 15 to page 19, line 1.

As illustrated in FIGS. 4 and 4d, blue secondary circuit 210B is coupled to the primary circuit for receiving a secondary voltage  $V_{BO}$  as a function of the primary voltage. Blue secondary circuit 210B includes a sub-array 230B of blue LEDs, a sub-array switch Q4 operable in an ON state for allowing a flow of a LED current through sub-array 230B of blue LEDs (the LED current being a function of secondary voltage  $V_{BO}$ ) and a sub-array controller 232B for controlling an operation of sub-array switch Q3 switch in the ON state. See, *U.S. Patent Application Serial No. 09/735,151* at page 18, line 15 to page 19, line 1.

Sub-array controller 232R, sub-array controller 232G, and sub-array controller 232B control the operation of sub-array switches Q5, Q3 and Q4 in a mutually exclusive manner. See, *U.S. Patent Application Serial No. 09/735,151* at page 18, line 15 to page 20, line 3.



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6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Pending claims 25-44, the claims on appeal, stand finally rejected under 35

U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,618,031 to *Bohn et al.*

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7. ARGUMENT

Anticipation. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Bohn. As illustrated in FIGS. 3-9, 14 and 15, *Bohn* disclose three embodiments of drive circuits for a LED based display device of multiple colors.

The first embodiment as illustrated in FIGS. 3, 4, 6, 7, 14 and 15 employs a primary circuit (now shown) for generating a primary voltage in the form of a supply voltage, and a single secondary circuit employing a red LED D11, a green LED D12, and blue LED D13 for receiving a secondary voltage in the form of led voltage VLED that is a function of the primary supply voltage. *Bohn* further discloses various PWM based circuits for coupling the primary circuit to the secondary circuit whereby a portion of the secondary voltage VLED is applied to LEDs D11-D13. See, *Bohn* at column 4, line 20 to column 7, line 59; and column 9, line 53 to column 10, line 10.

The second embodiment as illustrated in FIG. 8 employs a primary circuit (now shown) for generating a primary voltage in the form of a supply voltage, and a single

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secondary circuit employing an array of LEDs D18-D53 for receiving a secondary voltage in the form of led voltage VLED that is a function of the primary supply voltage. *Bohn* further discloses various PWM based circuits for coupling the primary circuit to the secondary circuit whereby a portion of the secondary voltage VLED is applied to LEDs D18-D53. See, *Bohn* at column 7, line 60 to column 8, line 17.

The third embodiment as illustrated in FIG. 9 employs a primary circuit (now shown) for generating a primary voltage in the form of a supply voltage, and a single secondary circuit employing a red, green and blue LED array 25, and a single controller (not shown) for controlling a column selector 27 and a row selector 29 in selectively applying a red secondary voltage from red-PWM power source 21, a green secondary voltage from green-PWM power source 22, and a blue secondary voltage from blue-PWM power source 23. See, *Bohn* at column 8, lines 18-43.

However, in all three embodiments, *Bohn* fails to disclose and teaches away from additional secondary circuits coupled to the primary circuit by teaching a single comprehensive secondary circuit containing a full complement of LEDs whereby each of LED currents (i.e., the red LED current, the green LED, and the blue LED current) are a function of the same LED voltage VLED and whereby the operation of the switches by the single comprehensive secondary circuit is in a "mutually dependent" manner for time sequential activation purposes and in view of any undesired effect on the amplitude of voltage VLED by one or more the switches.

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Claims 25 and 44. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “a first secondary circuit coupled to said primary circuit for receiving a first secondary voltage as a function of the primary voltage said first secondary circuit including a first sub-array of LEDs of a first color, a first sub-array switch operable in a first ON state for allowing a flow of a first LED current through said first sub-array of LEDs, the first LED current being a function of said first secondary voltage, and a first sub-array controller for controlling an operation of said first switch in the first ON state”, and “a second secondary circuit coupled to said primary circuit for receiving a second secondary voltage as a function of the primary voltage, said second secondary circuit including a second sub-array of LEDs of a second color, a second sub-array switch operable in a second ON state for allowing a flow of a second LED current through said second sub-array of LEDs, the second LED current being a function of said second secondary voltage, and a second sub-array controller for controlling an operation of said second switch in the second ON state” and “wherein said first sub-array controller controls the operation of said first sub-array switch in the first ON state and said second sub-array controller controls the operation of said second sub-array switch in the second ON state in a mutually exclusive manner” as recited in independent claims 25, and “a third secondary circuit coupled to said primary circuit for receiving a third secondary voltage as a function of the primary voltage, said third secondary circuit including a third sub-array of LEDs of a third color, a third sub-array switch operable in a third ON state for allowing a flow of a third LED current through said third sub-array of LEDs, the third

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LED current being a function of said third secondary voltage, and a third sub-array controller for controlling an operation of said third switch in the third ON state, wherein said first sub-array controller controls the operation of said first sub-array switch in the first ON state, said second sub-array controller controls the operation of said second sub-array switch in the second ON state, and said third sub-array controller controls the operation of said third sub-array switch in the third ON state in a mutually exclusive manner" as recited in dependent claim 44.

Withdrawal of the rejection of independent claims 25 and 44 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 26 and 27. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from "wherein said first sub-array controller controls the operation of said first switch in the first ON state as a function of a first feedback voltage indicative of a first LED voltage across said first sub-array of LEDs" as recited in dependent claim 26, and "wherein said second sub-array controller controls the operation of said second switch in the second ON state as a function of a second feedback voltage indicative of a second LED voltage across said second sub-array of LEDs" as recited in dependent claim 27.

Withdrawal of the rejection of dependent claims 26 and 27 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

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Claims 28 and 29. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first sub-array controller controls the operation of said first switch in the first ON state as a function of a first reference current indicative of a first commanded light output of said first sub-array of LEDs” as recited in dependent claim 29, and “wherein said second sub-array controller controls the operation of said second switch in the second ON state as a function of a second reference current indicative of a second commanded light output of said second sub-array of LEDs” as recited in dependent claim 29.

Withdrawal of the rejection of dependent claims 28 and 29 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 30 and 31. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first sub-array controller modulates the first LED current when said first sub-array switch is operating in the first ON state” as recited in dependent claim 30, and “wherein said second sub-array controller modulates the second LED current when said second sub-array switch is operating in the second ON state” as recited in dependent claim 31.

Withdrawal of the rejection of dependent claims 30 and 31 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

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Claims 32 and 33. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first sub-array controller controls at least one of a first pulse-amplitude modulation, a first pulse-width modulation, and a first pulse-frequency modulation of the first LED current when said first sub-array switch is operating in the first ON state” as recited in dependent claim 32, and “wherein said second sub-array controller controls at least one of a second pulse-amplitude modulation, a second pulse-width modulation, and a second pulse-frequency modulation of the second LED current when said second sub-array switch is operating in the second ON state” as recited in dependent claim 33.

Withdrawal of the rejection of dependent claims 32 and 33 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 34 and 35. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first secondary voltage is applied between a first point and a second point; wherein said first sub-array switch includes a first current path for connecting said first point to said first sub-array of LEDs when said first sub-array switch is operating in the first ON state; wherein said first sub-array switch further includes a first control input for controlling the operation of said first sub-array switch in the first ON state; and wherein said first sub-array controller is connected to said first control input to thereby control the operation of said first sub-array switch in the first ON state” as recited in dependent claim 34, and “wherein said second secondary voltage is applied

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between a third point and a fourth point; wherein said second sub-array switch includes a second current path connecting said third point to said second sub-array of LEDs when said second sub-array switch is operating in the second ON state; wherein said second sub-array switch further includes a second control input for controlling the operation of said second sub-array switch in the second ON state; and wherein said second sub-array controller is connected to said second control input to thereby control the operation of said second sub-array switch in the second ON state” as recited in dependent claim 35.

Withdrawal of the rejection of dependent claims 34 and 35 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 36, 38 and 40. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first secondary voltage is applied between a first point and a second point; wherein said first sub-array switch includes a first current path for connecting said first point to said first sub-array of LEDs when said first sub-array switch is operating in the first ON state; wherein said first sub-array switch further includes a first control input for controlling the operation of said first sub-array switch in the first ON state; and wherein said first sub-array controller is connected to said first control input to thereby control the operation of said first sub-array switch in the first ON state” as recited in dependent claims 36 and 38, and “wherein said second secondary voltage is applied between a third point and a fourth point; wherein said second sub-array switch includes a second current path for connecting said third point to said second sub-array of



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LEDs when said second sub-array switch is operating in the second ON state; wherein said second sub-array switch further includes a second control input for controlling the operation of said second sub-array switch in the second ON state; and wherein said second sub-array controller is connected to said second control input to thereby control the operation of said second sub-array switch in the second ON state” as recited in dependent claim 40.

Withdrawal of the rejection of dependent claims 36, 38 and 40 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 37, 39 and 41. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “wherein said first secondary circuit further includes a resistor connected to said first sub-array of LEDs and said first sub-array controller to facilitate a determination of the first feedback voltage by said first sub-array controller” as recited in dependent claims 37 and 39, and “wherein said first secondary circuit further includes a first resistor connected to said first sub-array of LEDs and said first sub-array controller to facilitate a determination of the first feedback voltage by said first sub-array controller; and wherein said second secondary circuit further includes a second resistor connected to said second sub-array of LEDs and said second sub-array controller to facilitate a determination of the second feedback voltage by said second sub-array controller” as recited in dependent claim 41.

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Withdrawal of the rejection of dependent claims 37, 39 and 41 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

Claims 42 and 43. The Appellant respectfully asserts that *Bohn* fails to disclose and teaches away from “a transformer including a first magnetic coupling of a primary winding and a first secondary winding, wherein said primary circuit is connected to said primary winding to thereby apply the primary voltage across said primary winding whereby the first secondary voltage is applied across said first secondary winding, and wherein said first secondary circuit is connected to said first secondary winding” as recited in dependent claim 42, and “wherein said transformer further includes a first magnetic coupling of a primary winding and a first secondary winding, and a second magnetic coupling of said primary winding and a second secondary winding; wherein said primary circuit is connected to said primary winding to thereby apply the primary voltage across said primary winding whereby the first secondary voltage is applied across said first secondary winding and the second secondary voltage is applied across said second secondary winding; and wherein said first secondary circuit is connected to said first secondary winding, and the second secondary circuit is connected to said second secondary winding” as recited in dependent claim 43.

Withdrawal of the rejection of dependent claims 42 and 43 under 35 U.S.C. §102(b) as being anticipated by *Bohn* is therefore respectfully requested.

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Dated: September 30, 2004

Respectfully submitted,  
Gert W. Bruning

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CLAIMS APPENDIX

25. A LED backlight for an LCD display, comprising:
- a primary circuit for generating a primary voltage;
  - a first secondary circuit coupled to said primary circuit for receiving a first secondary voltage as a function of the primary voltage, said first secondary circuit including
    - a first sub-array of LEDs of a first color,
    - a first sub-array switch operable in a first ON state for allowing a flow of a first LED current through said first sub-array of LEDs, the first LED current being a function of said first secondary voltage, and
    - a first sub-array controller for controlling an operation of said first switch in the first ON state; and
  - a second secondary circuit coupled to said primary circuit for receiving a second secondary voltage as a function of the primary voltage, said second secondary circuit including
    - a second sub-array of LEDs of a second color,
    - a second sub-array switch operable in a second ON state for allowing a flow of a second LED current through said second sub-array of LEDs, the second LED current being a function of said second secondary voltage, and
    - a second sub-array controller for controlling an operation of said second switch in the second ON state,

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wherein said first sub-array controller controls the operation of said first sub-array switch in the first ON state and said second sub-array controller controls the operation of said second sub-array switch in the second ON state in a mutually exclusive manner.

26. The LED backlight of claim 25,

wherein said first sub-array controller controls the operation of said first switch in the first ON state as a function of a first feedback voltage indicative of a first LED voltage across said first sub-array of LEDs.

27. The LED backlight of claim 26,

wherein said second sub-array controller controls the operation of said second switch in the second ON state as a function of a second feedback voltage indicative of a second LED voltage across said second sub-array of LEDs.

28. The LED backlight of claim 25,

wherein said first sub-array controller controls the operation of said first switch in the first ON state as a function of a first reference current indicative of a first commanded light output of said first sub-array of LEDs.

29. The LED backlight of claim 28,

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wherein said second sub-array controller controls the operation of said second switch in the second ON state as a function of a second reference current indicative of a second commanded light output of said second sub-array of LEDs.

30. The LED backlight of claim 25,

wherein said first sub-array controller modulates the first LED current when said first sub-array switch is operating in the first ON state.

31. The LED backlight of claim 30,

wherein said second sub-array controller modulates the second LED current when said second sub-array switch is operating in the second ON state.

32. The LED backlight of claim 25,

wherein said first sub-array controller controls at least one of a first pulse-amplitude modulation, a first pulse-width modulation, and a first pulse-frequency modulation of the first LED current when said first sub-array switch is operating in the first ON state.

33. The LED backlight of claim 32,

wherein said second sub-array controller controls at least one of a second pulse-amplitude modulation, a second pulse-width modulation, and a second pulse-frequency

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modulation of the second LED current when said second sub-array switch is operating in the second ON state.

34. The LED backlight of claim 25,  
wherein said first secondary voltage is applied between a first point and a second point;  
wherein said first sub-array switch includes a first current path for connecting said first point to said first sub-array of LEDs when said first sub-array switch is operating in the first ON state;  
wherein said first sub-array switch further includes a first control input for controlling the operation of said first sub-array switch in the first ON state; and  
wherein said first sub-array controller is connected to said first control input to thereby control the operation of said first sub-array switch in the first ON state.

35. The LED backlight of claim 34,  
wherein said second secondary voltage is applied between a third point and a fourth point;  
wherein said second sub-array switch includes a second current path connecting said third point to said second sub-array of LEDs when said second sub-array switch is operating in the second ON state;

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wherein said second sub-array switch further includes a second control input for controlling the operation of said second sub-array switch in the second ON state; and

wherein said second sub-array controller is connected to said second control input to thereby control the operation of said second sub-array switch in the second ON state.

36. The LED backlight of claim 26,

wherein said first secondary voltage is applied between a first point and a second point;

wherein said first sub-array switch includes a first current path for connecting said first point to said first sub-array of LEDs when said first sub-array switch is operating in the first ON state;

wherein said first sub-array switch further includes a first control input for controlling the operation of said first sub-array switch in the first ON state; and

wherein said first sub-array controller is connected to said first control input to thereby control the operation of said first sub-array switch in the first ON state.

37. The LED backlight of claim 36,

wherein said first secondary circuit further includes a resistor connected to said first sub-array of LEDs and said first sub-array controller to facilitate a determination of the first feedback voltage by said first sub-array controller.



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38. The LED backlight of claim 27,  
wherein said first secondary voltage is applied between a first point and a second point;

wherein said first sub-array switch includes a first current path for connecting said first point to said first sub-array of LEDs when said first sub-array switch is operating in the first ON state;

wherein said first sub-array switch further includes a first control input for controlling the operation of said first sub-array switch in the first ON state;

wherein said first sub-array controller is connected to said first control input to thereby control the operation of said first sub-array switch in the first ON state.

39. The LED backlight of claim 38,  
wherein said first secondary circuit further includes a resistor connected to said first sub-array of LEDs and said first sub-array controller to facilitate a determination of the first feedback voltage by said first sub-array controller.

40. The LED backlight of claim 38,  
wherein said second secondary voltage is applied between a third point and a fourth point;

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wherein said second sub-array switch includes a second current path for connecting said third point to said second sub-array of LEDs when said second sub-array switch is operating in the second ON state;

wherein said second sub-array switch further includes a second control input for controlling the operation of said second sub-array switch in the second ON state; and

wherein said second sub-array controller is connected to said second control input to thereby control the operation of said second sub-array switch in the second ON state.

41. The LED backlight of claim 40,

wherein said first secondary circuit further includes a first resistor connected to said first sub-array of LEDs and said first sub-array controller to facilitate a determination of the first feedback voltage by said first sub-array controller; and

wherein said second secondary circuit further includes a second resistor connected to said second sub-array of LEDs and said second sub-array controller to facilitate a determination of the second feedback voltage by said second sub-array controller.

42. The LED backlight of claim 25, further comprising:

a transformer including a first magnetic coupling of a primary winding and a first secondary winding,

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wherein said primary circuit is connected to said primary winding to thereby apply the primary voltage across said primary winding whereby the first secondary voltage is applied across said first secondary winding, and

wherein said first secondary circuit is connected to said first secondary winding.

43. The LED backlight of claim 25,

wherein said transformer further includes

a first magnetic coupling of a primary winding and a first secondary winding, and

a second magnetic coupling of said primary winding and a second secondary winding;

wherein said primary circuit is connected to said primary winding to thereby apply the primary voltage across said primary winding whereby the first secondary voltage is applied across said first secondary winding and the second secondary voltage is applied across said second secondary winding; and

wherein said first secondary circuit is connected to said first secondary winding, and the second secondary circuit is connected to said second secondary winding.

44. The LED backlight of claim 25, further comprising:

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a third secondary circuit coupled to said primary circuit for receiving a third secondary voltage as a function of the primary voltage, said third secondary circuit including

a third sub-array of LEDs of a third color,

a third sub-array switch operable in a third ON state for allowing a flow of a third LED current through said third sub-array of LEDs, the third LED current being a function of said third secondary voltage, and

a third sub-array controller for controlling an operation of said third switch in the third ON state,

wherein said first sub-array controller controls the operation of said first sub-array switch in the first ON state, said second sub-array controller controls the operation of said second sub-array switch in the second ON state, and said third sub-array controller controls the operation of said third sub-array switch in the third ON state in a mutually exclusive manner.

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EVIDENCE APPENDIX

None.